



Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing¹

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1. Scope*

1.1 This specification covers the minimum requirements for and methods of application of exterior gypsum panel products that are specifically designed for use as a substrate for exterior cladding.

1.1.1 This specification does not cover gypsum panel products that are specifically designed for interior applications.

1.2 Details of construction for a specific assembly to achieve the required fire resistance shall be obtained from reports of fire-resistance tests, engineering evaluations, or listings from recognized fire testing laboratories.

1.2.1 This specification shall govern where it is more stringent (size or thickness of framing and size and spacing of fasteners) than the fire-rated construction.

1.3 Where sound control is required for a gypsum panel product assembly, the details of construction shall be in accordance with the acoustical test report of an assembly that has met the required acoustical value(s).

1.3.1 This specification shall govern where it is more stringent (size or thickness of framing and size and spacing of fasteners) than the sound-rated construction.

1.4 Where resistance to racking loads or shear is required for a gypsum panel product assembly, the details of construction shall be in accordance with the racking or shear test report of an assembly that has met the required racking or shear value(s).

1.4.1 This specification shall govern where it is more stringent (size or thickness of framing and size and spacing of fasteners) than the racking or shear-tested construction.

1.5 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.6 The text of this standard references notes which provide explanatory material. These notes shall not be considered as requirements of the standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

C11 Terminology Relating to Gypsum and Related Building Materials and Systems

C954 Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

C955 Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases

C1002 Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

C1007 Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories

C1063 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster

C1177/C1177M Specification for Glass Mat Gypsum Substrate for Use as Sheathing

C1278/C1278M Specification for Fiber-Reinforced Gypsum Panel

C1396/C1396M Specification for Gypsum Board

2.2 U.S. Department of Commerce Publication:

PS20 American Softwood Lumber Standard³

¹ This specification is under the jurisdiction of ASTM Committee C11 on Gypsum and Related Building Materials and Systems and is the direct responsibility of Subcommittee C11.03 on Specifications for the Application of Gypsum and Other Products in Assemblies.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3. Terminology

3.1 *Definitions*—Definitions shall be in accordance with Terminology C11.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *exterior cladding, n*—a permanent material or system that impedes the transmission of environmental elements to the gypsum panel products used as sheathing.

3.2.2 *fastener, n*—nails, staples, or screws used for application of the gypsum panel product.

3.2.3 *framing member, n*—studs, headers, bracing, and blocking that serve to receive the gypsum panel product.

3.2.4 *horizontal application, n*—a synonym for *perpendicular application*.

3.2.5 *parallel application, n*—gypsum panel product applied with the factory edges parallel to the framing members; a synonym for *vertical application*.

3.2.6 *perpendicular application, n*—gypsum panel product applied with the factory edges at right angles to the framing members; a synonym for *horizontal application*.

3.2.7 *require, v*—to mandate by a force outside this specification, such as a building code, project specification, contract, or purchase order.

3.2.8 *specified, adj*—pertaining to a mandatory requirement of this specification or a referenced requirement.

3.2.9 *specify, v*—to mandate by an obligation of this standard or a referenced document.

3.2.10 *vertical application, n*—synonym for *parallel application*.

3.2.11 *weather-resistive barrier, n*—a temporarily exposed protective membrane that is intended to impede the penetration of environmental elements until the installation of a permanent exterior cladding.

4. Exposure After Installation

4.1 Gypsum sheathing board is a paper faced substrate that shall be covered by an exterior cladding or other weather-resistive barrier and is not intended for long-term exposure. It shall not be exposed to the elements for more than 30 days after it has been installed. Gypsum sheathing shall be covered with a weather-resistive barrier within 30 days if the exposure time will be more than 30 days.

NOTE 1—Some building codes require an additional weather-resistive barrier. The exterior face paper of the sheathing shall be dry prior to application of the additional weather-resistive barrier.

4.2 Water-Resistant Exterior Fiber-Reinforced Gypsum Sheathing Panels provide a substrate that shall be covered by an exterior cladding or other weather-resistive barrier and is not intended for long-term exposure. Refer to manufacturer's recommendations for maximum exposure time. Water-Resistant Exterior Fiber-Reinforced Gypsum Sheathing Panels shall be covered with a water-resistive barrier if exposure time is expected to exceed the manufacturers' recommended maximum exposure time.

4.2.1 Gypsum sheathing used in building construction shall be not less than 8 in. (200 mm) from the finish grade in fully

weather and water protected siding systems and in properly drained and ventilated crawl spaces. All cut edges shall be protected from water and moisture. The ground's surface in the crawl space shall be covered with a vapor retarder.

4.3 Glass Mat Gypsum Substrate for Use as Sheathing provides a substrate that shall be covered by an exterior cladding or other weather-resistive barrier and is not intended for long-term exposure. Refer to manufacturer's recommendations for maximum exposure time. Glass Mat Gypsum Substrate for Use as Sheathing shall be covered with a water-resistive barrier if exposure time is expected to exceed the manufacturers' recommended maximum exposure time.

5. Materials and Manufacture

5.1 *Gypsum Sheathing*—Specification C1396/C1396M, Section 9.

5.1.1 *Type X (Special Fire-Resistant) Gypsum Sheathing*—Gypsum sheathing that provides a greater degree of fire resistance than regular gypsum sheathing as defined in Specification C1396/C1396M.

5.2 *Water-Resistant Exterior Fiber-Reinforced Gypsum Sheathing Panels*—Specification C1278/C1278M, Section 8.

5.2.1 *Type X (Special Fire-Resistant) Water-Resistant Exterior Fiber-Reinforced Gypsum Sheathing Panels*—Water-resistant exterior fiber-reinforced gypsum sheathing panels that provide a greater degree of fire resistance than regular water-resistant fiber-reinforced gypsum sheathing panels as defined in Specification C1278/C1278M.

5.3 *Glass Mat Gypsum Substrate for Use as Sheathing*—Specification C1177/C1177M.

5.3.1 *Type X Glass Mat Gypsum Substrate for Use as Sheathing*—Glass Mat Gypsum Substrate for Use as Sheathing that provides a greater degree of fire resistance than regular Glass Mat Gypsum Substrate for Use as Sheathing as defined in Specification C1177/C1177M.

5.4 *Fasteners*—Fasteners shall be as described in 5.4.1 through 5.4.3. The fastener length shall be not less than that specified in Table 1.

5.4.1 *Nails*—Nails shall be not less than 12-gauge galvanized, 7/16-in. (11-mm) diameter head.

5.4.2 *Screws*:

5.4.2.1 Screws for fastening gypsum panel products to wood framing members, and to steel framing members less

TABLE 1 Minimum Fastener Lengths

Framing Type	Fastener Type	Sheathing Thickness, in. (mm)	Minimum Fastener Length, in. (mm)
Wood	Nails	1/2 (12.7)	1-1/2 (38)
		5/8 (15.9)	1-3/4 (45)
	Screws	1/2 (12.7)	1-1/4 (32)
		5/8 (15.9)	1-1/4 (32)
		Staples ^A	1-1/2 (38)
Steel	Screws	5/8 (15.9)	1-3/4 (45)
		1/2 (12.7)	1 (25)
		5/8 (15.9)	1-1/4 (32)

^A Staples shall be used to apply only Gypsum Sheathing board meeting Specification C1396/C1396M.

than 0.033 in. (0.84-mm) in thickness, shall meet the requirements of Specification **C1002**.

5.4.2.2 Screws for fastening gypsum panel products to steel framing members from 0.033 to 0.112-in. (0.84 to 2.84-mm) in thickness shall meet the requirements of Specification **C954**.

5.4.2.3 Trim-head screws shall not be permitted for the attachment of gypsum panel products.

5.4.2.4 Screws for fastening self-furred metal lath over gypsum panel products as described in **8.2.7** shall be as specified in Specification **C1063**.

5.4.3 *Staples*—Staples shall be of galvanized steel, not less than 16-gauge, 7/16-in. (11-mm) wide crown outside measurement. Legs shall have divergent points.

5.5 *Framing Members:*

5.5.1 *Wood Framing*—Wood framing members shall conform to PS20.

5.5.2 *Steel Framing*—Load-bearing steel framing shall meet the requirements of Specification **C955**.

6. Substrate, Surface Preparation

6.1 The maximum spacing for framing members for gypsum panel products shall be not more than 24-in. (610-mm) on center on walls.

6.1.1 Wood framing shall be straight and true, attached securely following accepted engineering practices and as required for the intended design. The surfaces to which abutting edges or ends of gypsum panel products are to be attached shall be not less than 1½-in. (38-mm) wide. The bearing surface shall be not less than ¾-in. (19-mm) for internal corners or angles.

6.1.2 Load-bearing metal framing members shall be of the proper size and design for their intended use and shall be installed in accordance with Specification **C1007**.

7. Framing Alignment

7.1 Framing members shall be installed so that the surface will be in an even plane, unless otherwise specified, after the gypsum panel products have been applied.

8. Cutting and Application of Gypsum Panel Products

8.1 *Cutting Gypsum Panel Products:*

8.1.1 The gypsum panel products shall be cut by scoring and breaking or by sawing, working from the face side. The face of faced gypsum panel products shall be cut with a sharp knife or other suitable tool when cutting by scoring. The gypsum panel product shall be broken by snapping the gypsum panel product in the reverse direction or by cutting the facer on the back surface with a knife or suitable tool.

8.1.2 The cut edges and ends of gypsum panel products shall be trimmed to obtain neat fitting joints when installed.

8.1.3 Holes for pipes, fixtures, or other small openings shall be scored on the face before removing the cutout with a saw or special tool designed for this purpose.

8.1.4 Where gypsum panel products meet projecting surfaces, the gypsum panel product shall be scribed and cut neatly.

8.2 *Application of Gypsum Panel Products:*

8.2.1 Gypsum panel products shall be fitted snugly around all window and door openings.

8.2.1.1 Gypsum panel product joints shall be offset a minimum of 4-in. (100-mm) from the edge of any opening.

8.2.1.2 Gypsum panel products shall be flashed at openings so that water intrusion will not contact the gypsum panel product.

8.2.2 All vertical end and edge joints shall abut over the centers of framing members and shall be offset a minimum of one framing space between adjacent rows of gypsum panel products.

8.2.3 *Control Joints:*

8.2.3.1 Control joints shall be provided in wall runs exceeding 30-ft (9 m) in length. The distance between control joints shall be not more than 30-ft (9 m).

8.2.3.2 Control joints shall be installed in walls wherever there is a building construction joint or where required.

8.2.3.3 The location of the control joints shall be as required by either the building design or the exterior cladding specified.

8.2.3.4 Control joints, other accessories, and metal plaster base shall be fastened through gypsum panel products to framing members.

8.2.4 Gypsum panel products, 4-ft (1220-mm) wide, shall be applied either parallel or perpendicular to framing members.

8.2.4.1 Square edge gypsum panel products applied perpendicular to framing members shall be covered with a water-resistant barrier, or horizontal joints shall be sealed.

8.2.5 Tongue and groove gypsum panel products shall be applied with the long dimension perpendicular to framing members, with the grooved edges down, interlocking the tongue of the gypsum panel product below without forcing.

8.2.6 *Application of Gypsum Panel Products*—Fasteners shall be spaced not more than 8-in. (200-mm) on center along vertical ends or edges and intermediate supports. The length of fasteners shall be as indicated in **Table 1**.

8.2.6.1 Gypsum sheathing board shall be applied with nails, screws or staples. Water-Resistant Exterior Fiber-Reinforced Gypsum Sheathing Panels and Glass Mat Gypsum Substrate for Use as Sheathing shall be applied with nails or screws.

8.2.6.2 Fasteners shall be located not less than ⅜-in. (10-mm) from the ends and edges of the gypsum panel product.

8.2.6.3 Gypsum panel products shall be held tight against the framing when driving fasteners.

8.2.6.4 Fasteners shall be driven so that the heads are at or slightly below the surface of the gypsum panel product without breaking the face paper or glass mat, or fracturing the core.

8.2.6.5 Screws shall be driven without stripping the framing member around the screw shank.

8.2.6.6 Staples shall be driven with the crown parallel to the framing member.

8.2.7 *Application of Gypsum Panel Products Under Self-Furred Metal Lath*—Where fire resistance or shear resistance is not required, and when metal lath and portland cement plaster are to be applied as the exterior cladding over gypsum panel products installed over framing members spaced not more than 16-in. (406-mm) on center, and the metal lath shall be installed in accordance with Specification **C1063** within 24 h after the gypsum panel products, the gypsum panel products shall be

permitted to be applied as specified in 8.2.7.1 and 8.2.7.2, and fastening of the gypsum panel products shall be completed with the attachment of the self-furred metal lath.

8.2.7.1 For 2-ft (610-mm) wide sheathing installed in accordance with 8.2.5, vertical ends of gypsum panel products shall be fastened in accordance with 8.2.6. Gypsum panel products shall be fastened in place at each intermediate stud with a minimum of two fasteners per gypsum panel product spaced not more than 2-in. (50-mm) from opposite edges.

8.2.7.2 For 4-ft (1220-mm) wide sheathing installed in accordance with 8.2.4, vertical ends or edges of gypsum panel

products shall be fastened in accordance with 8.2.6. Gypsum panel products shall be fastened in place at each intermediate stud with fasteners spaced not more than 24-in. (610-mm) on center.

8.2.8 Accessories and metal plaster base shall be fastened through gypsum panel products to framing members.

9. Keywords

9.1 exterior walls; gypsum; gypsum panel products; sheathing

SUMMARY OF CHANGES

Committee C11 has identified the location of selected changes to this specification since the last issue, C1280 – 13, that may impact the use of this specification. (Approved Nov. 15, 2013)

(1) Added 4.2.1.

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